

THE COMMISSIONER OF PATENTS AND TRADEMARKS, Washington, D.C. 20231

Enclosed for filing is the patent application of Inventor(s): PETER J.T. VAN RAVENSTEIN, CHRISTIAAN C.M. VISSCHERS

For: OBSERVATION SYSTEM

ENCLOSED ARE:

- [X] Appointment of Associates;
 [] Information Disclosure Statement, Form PTO-1449 and copies of documents listed therein;
 [] Preliminary Amendment;
 [X] Specification (6 Pages of Specification, Claims, & Abstract);
 [X] Declaration and Power of Attorney:
 (1 Page of a [X] fully executed [] unsigned Declaration);
 [X] Drawing (1 sheet of [] informal [X] formal sheets);
 [X] Certified copy of European application Serial No. 98201510.9;
 [X] Authorization Pursuant to 37 CFR §1.136(a)(3)
 [] Other;
 [X] Assignment to U.S. Philips Corporation.

FEE COMPUTATION

CLAIMS AS FILED				
FOR	NUMBER FILED	NUMBER EXTRA	RATE	BASIC FEE - \$760.00
Total Claims	5 - 20 =	0	X \$18 =	0.00
Independent Claims	2 - 3 =	0	X \$78 =	0.00
Multiple Dependent Claims, if any			\$260 =	0.00
TOTAL FILING FEE				\$760.00

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[] Amend the specification by inserting before the first line as a centered heading --Cross Reference to Related Applications--; and insert below that as a new paragraph --This is a continuation-in-part of application Serial No. , filed , which is herein incorporated by reference--.

CERTIFICATE OF EXPRESS MAILING

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 I hereby certify that this paper and/or fee is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. 1.10 on the date indicated above and is addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

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Observation system.

The invention relates to an observation system, and to an observation monitor.

In prior art observation systems, a plurality of observation cameras (e.g. 4) are connected to a single observation monitor. Possibly, it is even possible to display ordinary television signals on the observation monitor. Most of the times, nothing happens on the monitor screen, so that the guard gets bored and does other things such as reading a book or a magazine, or watching a football game. It is thus possible that important events are missed.

It is, *inter alia*, an object of the invention to provide an observation system and an observation monitor which do not suffer from the above-mentioned disadvantage. To this end, a first aspect of the invention provides an observation system as defined by claim 1. A second aspect of the invention provides a method of observing a complex as defined by claim 5. A third aspect of the invention provides an observation monitor control unit as defined by claim 6. Advantageous embodiments are defined in the dependent claims.

In an observation system in accordance with a primary aspect of the present invention, comprising an observation camera and an observation monitor unit coupled to the observation camera, upon the occurrence of a for observation purposes relevant event (e.g. a ringing doorbell) a plurality of preferably sub-sampled images including an image at a time of the event are recorded and a sequence formed by the plurality of images is repeatedly displayed.

The invention solves the mentioned problem that relevant events may be missed, in that a for observation purposes relevant event is detected, and a sequence of images including an image at the time of that event is repeatedly replayed on an observation monitor. This will draw the guard's attention, so that appropriate action is taken. The event may, for example, be a doorbell, a cable cut, an alarm contact, or a movement detection.

Preferably, the displayed image sequence includes images preceding the event. If 8 seconds are stored at a 2 frames per second rate, the sequence preferably comprises 4

seconds before and 4 seconds after the event.

Advantageously, the sequence is displayed in PIP form, which is a more attention-drawing format and which needs less storage memory.

Preferably, in the case of multiple events, a sequence including a latest of the
5 multiple events is repeatedly displayed.

These and other aspects of the invention will be apparent from and elucidated with reference to the embodiments described hereinafter.

10 The drawing shows an embodiment of an observation system in accordance with
the present invention

In the drawing, four cameras A, B, C, D are coupled to a control unit CU. The control unit CU may further receive an antenna signal from an antenna AN thru a tuner (not shown) to allow the guards to watch a football game or something like that. In accordance with the present invention, the control unit CU also receives a doorbell signal from a doorbell DB, an alarm signal from a wire cut detector WCD detecting whether a wire W is cut, and/or a movement detection signal from a movement detector (not shown). In this embodiment, it is supposed that camera A watches the doorbell DB, while camera B watches the wire W. An output of the control unit CU is coupled to a monitor M for displaying the camera signals A, B, C, D (all four together or a selected one of them), or the football match from the antenna AN.

If the doorbell DB is pressed (or some other for observation purposes relevant event occurs), the control unit CU stores a small sequence of images (e.g. 16 images at a rate of 2 images per second), preferably half of which precedes the doorbell-pressing action and half of which follows the doorbell-pressing action. This is possible if the images from the cameras are continuously applied to a storage unit (not shown) and stored upon activation of the doorbell DB or upon some other activity, or if the images of the cameras are continuously spatially and temporally subsampled and delayed, and stored immediately upon receipt of an alarm. The delayed signal is then stored and will show some seconds preceding the alarm as well as some seconds following the alarm. The subsampled images are shown in a picture-in-picture (PIP) window E on the display screen of the monitor M. Preferably, a known photo-finish PIP IC or IC set is used for this purpose. While in the drawing, the PIP

image E is shown inserted into image B from camera B among images A, C, D from cameras A, C, D, it is also possible that image E pops up while a football match is shown on the monitor M, or that the monitor M automatically switches over from displaying images received by the antenna AN to (one of) the camera images A, B, C, D with PIP image E repeatedly showing the relevant event.

A practical embodiment is briefly summarized as follows. The invention can be applied in a low-cost black and white observation system. In this observation system there will be an event replay (store and replay) function. If there is an event (doorbell or alarm) then the observation system stores 4 seconds before the event and 4 seconds after the event in a PIP memory. In case of a cable cut disconnecting a camera from the control unit, the last 8 eight seconds before the event occurs, will be stored. During storage of the frames it will display at the same time the frames, in a small (1/8 size) PIP in the right top corner of the screen, in a sequential loop, the stored frames. The displaying speed is at the store sample rate. If there is an event, this replay function will be started automatically after detecting such an event. In case of multiple events on multiple cameras, the system will always switch to the camera corresponding to the latest event, and this latest event will be stored and replayed. The replay function starts with the oldest stored frame. In 50 and 60 Hz systems the number of stored frames is 16.

It should be noted that the above-mentioned embodiments illustrate rather than limit the invention, and that those skilled in the art will be able to design many alternative embodiments without departing from the scope of the appended claims. In the claims, any reference signs placed between parentheses shall not be construed as limiting the claim. The word "comprising" does not exclude the presence of other elements than those listed in a claim. The invention can be implemented by means of hardware comprising several distinct elements, and by means of a suitably programmed computer. In the device claim enumerating several means, several of these means can be embodied by one and the same item of hardware. Where the claim mentions an observation camera and an observation monitor, several of these cameras and/or monitors may be present in the observation system. The sequence can be displayed temporally subsequently in one PIP section E on the display, or as e.g. 16 small pictures spatially adjacent to each other. The control unit CU and the monitor M may be included in one apparatus, or may be sold as separate units as shown in the drawing.

Claims:

1. An observation system, comprising:
an observation camera (A, B, C, D); and
an observation monitor unit (CU, M) coupled to said observation camera (A, B, C, D); characterized by:

5 means (DB, WCD) for detecting a for observation purposes relevant event; and
wherein

said observation monitor unit (CU, M) comprises:

recording means (REC) for recording a plurality of images including an image
at a time of said event;

10 means (M) for repeatedly displaying a sequence (E) formed by said plurality of
images upon said event.

2. An observation system as claimed in claim 1, wherein said plurality of images
includes images preceding said event.

3. An observation system as claimed in claim 1, wherein said sequence is
displayed in PIP form (E).

4. An observation system as claimed in claim 1, wherein in the case of multiple
20 events, a sequence including a latest of said multiple events is repeatedly displayed.

5. A method of observing a complex, the method including:
using at least one observation camera (A, B, C, D) and an observation monitor
unit (CU, M) coupled to said at least one observation camera (A, B, C, D); characterized
25 by:

detecting (DB, WCD) a for observation purposes relevant event;

(CU) a plurality of images including an image at a time of said event; and

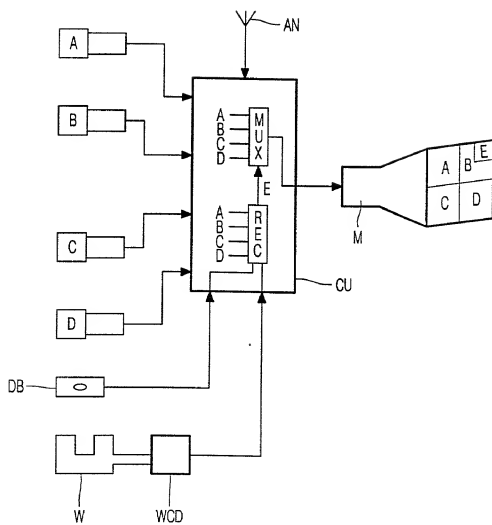
repeatedly displaying (M) a sequence (E) formed by said plurality of images
upon said event.

means for receiving camera signals (A, B, C, D):

5 means (REC) for recording a plurality of sub-sampled images including an image at a time of said relevant event to repeatedly supply a sequence formed by said plurality of sub-sampled images.

Abstract:

In an observation system, comprising an observation camera (A, B, C, D), and an observation monitor unit (CU, M) coupled to the observation camera (A, B, C, D), upon the occurrence of a for observation purposes relevant event (doorbell DB) a plurality of preferably sub-sampled images including an image at a time of the event are recorded and a sequence (E) formed by the plurality of images is repeatedly displayed.



DECLARATION and POWER OF ATTORNEY

ATTORNEY'S DOCKET NO.:
PHN 16.914

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe I am the original, first and sole inventor (if only one name is listed below) or an original, first joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled

"Observation system"

the specification of which (check one)

☒ is attached hereto.

☐ was filed on _____ as Application Serial No. _____ and was amended on _____ (if applicable).

I hereby state that I have reviewed and understand the contents of the above-identified specification, including the claims, as amended by the amendment(s) referred to above.

I acknowledge the duty to disclose information which is material to patentability of this application in accordance with Title 37, Code of Federal Regulations, § 1.56(a).

I hereby claim foreign priority benefits under Title 35, United States Code, § 119 of any foreign application(s) for patent or inventor's certificate listed below and have also identified below any foreign application for patent or inventor's certificate having a filing date before that of the application on which priority is claimed:

PRIOR FOREIGN APPLICATION(S)

COUNTRY	APP. NUMBER	DATE OF FILING (DATE, MONTH, YEAR)	PRIORITY CLAIMED UNDER 35 U.S.C. 119
Europe	98201510.9	8 May 1998	YES

I hereby claim the benefit under Title 35, United States Code, § 120 of any United States application(s) listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application in the manner provided by the first paragraph of Title 35 United States Code, § 112, I acknowledge the duty to disclose material information as defined in Title 37, Code of Federal Regulations, § 1.56(a) which occurred between the filing date of the prior application and the national or PCT international filing date of this application:

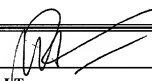
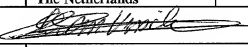
PRIOR UNITED STATES APPLICATION(S)

APPLICATION SERIAL NUMBER	FILING DATE	STATUS (PATENTED, PENDING, ABANDONED)

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

POWER OF ATTORNEY: As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and transact all business in the Patent and Trademark Office connected therewith. (list name and registration number)

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SEND CORRESPONDENCE TO: Corporate Patent Counsel; U.S. Philips Corporation; 580 White Plains Road; Tarrytown, NY 10591		DIRECT TELEPHONE CALLS TO: (name and telephone No.) (914) 332-0222	
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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Atty. Docket

PETER J.T. VAN RAVENSTEIN ET AL

PHN 16,914

Serial No.

Group Art Unit

Filed: CONCURRENTLY

Examiner:

Title: OBSERVATION SYSTEM

Honorable Commissioner of Patents and Trademarks
Washington, D.C. 20231

APPOINTMENT OF ASSOCIATES

Sir:

The undersigned Attorney of Record hereby revokes all prior appointments (if any) of Associate Attorney(s) or Agent(s) in the above-captioned case and appoints:

MICHAEL E. MARION (Registration No. 32,266)
c/o U.S. PHILIPS CORPORATION, Intellectual Property Department, 580 White Plains Road, Tarrytown, New York 10591, his Associate Attorney(s)/Agent(s) with all the usual powers to prosecute the above-identified application and any division or continuation thereof, to make alterations and amendments therein, and to transact all business in the Patent and Trademark Office connected therewith.

ALL CORRESPONDENCE CONCERNING THIS APPLICATION AND THE LETTERS PATENT WHEN GRANTED SHOULD BE ADDRESSED TO THE UNDERSIGNED ATTORNEY OF RECORD.

Respectfully,


Jack E. Haken, Reg. 26,902
Attorney of Record

Dated at Tarrytown, New York
this May 4, 1999

0030455-06240